

REMARKS

Claims 45-72 are pending in this application. By this Amendment, claims 46, 48, 51-54, 57, 61, 62, 65, 69 and 70 are amended. Reconsideration based on the above amendments and following remarks is respectfully requested.

I. **CLAIMS 46-49, 51, 53, 62, 63 AND 64 SATISFY THE REQUIREMENTS OF 35 U.S.C. §112, FIRST PARAGRAPH**

The Office Action rejects claims 46-49, 51, 53 and 62-64 under 35 U.S.C. §112, first paragraph, for containing subject matter not described in the specification. The rejection is respectfully traversed.

Claims 46, 48, 51, 53 and 62 have been amended to obviate the §112, first paragraph, rejection. Furthermore, Applicant respectfully asserts that the features of claims 45-72 are fully disclosed in, and supported by the specification, at least as discussed below:

Claim 47

user interface and details, e.g. *control elements* -- pg. 2, lines 15-19; pg. 3, lines 2-12; also by reference to commercial system discussed at pg. 4, lines 13-20 and 20-25 (the user interface of that system includes such tools and control elements);

Claim 49

plurality of lenses -- pg. 2, lines 19-21; pg. 6, lines 7-10; pg. 10, line 23;

Claim 63

generating control instruction...based at least partially on the current state... -- pg. 2, line 9 to pg. 3, line 6; pg. 6, lines 7-10; pg. 10, line 14 to pg. 11, line 27;

Claim 64

external views of the machine vision system -- pg. 2, lines 15-21; pg. 2, line 31 to pg. 3, line 6; pg. 6, lines 16-19.

Applicant respectfully submits that claims 46-49, 51, 53 and 62-64 satisfy the requirements of 35 U.S.C. §112, first paragraph and respectfully requests the withdrawal of the rejection under 35 U.S.C. §112, first paragraph.

II. CLAIM 46 SATISFIES THE REQUIREMENTS OF 35 U.S.C. §112, SECOND PARAGRAPH

The Office Action rejects claim 46 under 35 U.S.C. §112, second paragraph, because of an informality. Claim 46 has been amended to obviate the rejection. Withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

III. THE CLAIMS DEFINE ALLOWABLE SUBJECT MATTER

The Office Action rejects claims 45, 46, 48-50, 52, 53, 55 and 56 under 35 U.S.C. §102(a) over "Modeling optical vision systems with innovative software" by Michael Stevenson et al. (hereinafter "Stevenson"); and rejects claims 47, 51, 52, 54 and 57-72 under 35 U.S.C. §103(a) over Stevenson in view of U.S. Patent 5,137,450 to Thomas (hereinafter "Thomas"). The rejections are respectfully traversed.

Stevenson is generally directed to an image simulation engine / image rendering system. While Stevenson arguably teaches or suggests designing an optical vision system, Stevenson does not disclose, teach or suggest an "off-line programming system for a machine vision system...operable to... ", as set forth in independent claims 45 and 55, and similarly set forth in independent claim 57. Further, Stevenson does not disclose, teach or suggest "operating an off-line programming system for a machine vision inspection system", as set forth in independent claim 65, or performing "off-line machine vision inspection system simulation for a machine vision inspection system", as set forth in independent claim 69.

The Office Action seems to completely ignore the above features present in claims 45-72.

Further, Stevenson fails to teach or suggest the feature "a control instruction generating portion" (set forth in claims 45 and 55) which is implicitly used to generate at least

one control instruction usable in an inspection program for the at least one object inspectable by the machine vision inspection system. Contrary to the Office Action's interpretation (see, for example, Office Action at page 7, at least item 42 and other similar remarks) for Stevenson to "decide" the "proper" parameters is not at all to control them with instructions in a machine vision system. In Stevenson, the parameters and instructions are for controlling Stevenson's image simulation engine, not for controlling a specific machine vision inspection system.

Moreover, Stevenson makes no disclosure of how to link his image simulation engine to control a programming system for an actual machine vision system and does not even contemplate such a use. In contrast, Stevenson only indicates that his system is a physically-realistic system suitable for supporting design decisions by designers of vision systems, not for providing programming instructions for a specific machine vision system.

Furthermore, Stevenson does not teach or suggest "user-alterable control elements", as set forth in claims 45, 55, 57, 65 and 69, specific to the corresponding specific machine vision system. Such elements are not contemplated in Stevenson.

In addition, Stevenson does not teach or suggest "generate at least one control instruction usable in an inspection program for the at least one object inspectable by the machine vision inspection system, based at least partially on the current state of the user-alterable control elements" as set forth in claim 45, and similarly set forth in claim 65. Since Stevenson fails to teach or suggest user-alterable control elements specific to the corresponding specific machine vision system, Stevenson cannot teach operating an off-line programming system or generating a control instruction that is specific to the corresponding specific machine vision system. As discussed above, Stevenson makes no disclosure of how to link his simulation engine to control a programming system for an actual machine vision

system, nor how to link his simulation engine to control elements or to otherwise support elements of the user interface derived from an actual vision system.

Moreover, as admitted by the Office Action at page 30, item 206, Stevenson fails to teach or suggest a user interface having features and functions recited in claims 45-72. For example, in Stevenson, the two or three pre-existing programs that are combined apparently require the respective individual user interfaces and "translators" disclosed and shown in the figures of Stevenson in order to manipulate those programs.

Contrary to the Office Action's assertion, the user interface of an existing machine vision system cannot be "simply copied" to interface to the system of Stevenson. Thus, adding the user interface modules of an existing machine vision system would require intentionally suppressing Stevenson's interfaces (which requires additional superfluous programming), and writing special routines to translate the instructions generated by the machine vision system control elements into a chosen set of instructions sufficient to reliably operate the (now suppressed) individual user interfaces and "translators" disclosed in Stevenson (which again requires additional superfluous programming). It is not even clear that any two of Stevenson's programs are in the same programming language. It should be noted that Stevenson has not even managed to combine his own individual user interfaces into a unified user interface, but uses "translators" instead. Such approaches for software "system architecture" are notorious for resulting in programs that are "buggy", unreliable, and difficult to maintain.

In contrast to the software interface of Stevenson, the user interface set forth in claims 45-72 includes an architecture for integrating an image rendering engine with a hardware component simulation system and a Vision Inspection Control System derived from an actual machine vision system. This user interface overcomes the problems and limitations of

Stevenson, and provides a reliable and easily maintained system that is well suited for off-line programming of specific machine vision systems by the typical users of such systems.

Additionally, nothing in Stevenson indicates that the image rendering engine (image simulator) disclosed in Stevenson is useful for vision inspection system training functions set forth in at least in claims 47, 51, 53, 54, 57, 62, 64, 65 and 69. In the sense of a general training of an operator of a specific machine vision system, such an operator would not be qualified to input lens parameters and the like, as disclosed in Stevenson. Rather this requires a system designer, as disclosed in Stevenson. Furthermore, such training would necessarily require user-alterable control elements specific to the corresponding specific machine vision system. As discussed above, such user-alterable control elements are not contemplated in Stevenson.

Thomas fails to make up for the deficiencies of Stevenson.

Thomas, at Abstract, col. 1, lines 13-16, col. 2, lines 45-58, col. 3 lines 24-26, col. 4, line 47 to col. 6, line 49, and in Figs. 1-6, discloses the physical recreation of a cockpit of a plane and the displays associated with flying a plane. In Thomas, video images previously recorded are projected by projectors onto several screens around the pilot(s) so as to display out-the-window views that the pilot(s) would observe from the cockpit of the plane. The pilot in Thomas is fitted with a helmet having a magnetic tracker or position indicator that allows the flight simulation system to switch the various video images displayed to the pilot according to where the pilot's head and eyes are pointing at a particular moment.

Thomas has no need for focus-dependent images. Thus, Thomas provides no motivation to combine with Stevenson.

For at least the reasons discussed above, Applicant submits that claims 45-72 distinguish over the applied art. Withdrawal of the rejections of claims 45, 46, 48-50, 52, 53,

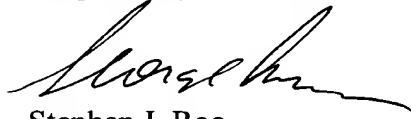
55 and 56 under 35 U.S.C. §102(a) and of claims 47, 51, 52, 54 and 57-72 under 35 U.S.C. §103(a) is respectfully requested.

IV. CONCLUSION

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 45-72 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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